

### **REMARKS**

Please reconsider the application in view of the above amendments and the following remarks.

#### **Status of Claims**

Claims 1-29 are rejected. Claims 1, 3-6, 12, 13, 17, 20, 26 and 27 have been amended. Claims 2, 14, 18 and 21 have been cancelled. New claims 30-32 have been added. Claims 1, 3-13, 15-17, 19, 20 and 22-32 are currently pending.

#### **Objections**

Pursuant to the Examiner's suggestion, Applicant has amended claim 26 to recite "of a Raman/EDFA amplifier."

#### **Claim Rejections – 35 USC § 112**

Claims 4 and 26 are rejected under 35 USC 112, second paragraph, as being indefinite. To correct the antecedent basis problems noted by the Examiner, Applicant has amended dependent claim 4 to be dependent from claim 3 and has amended dependent claim 26 to be dependent from claim 20. Accordingly, Applicant requests that the rejection under 35 USC § 112, second paragraph, be withdrawn.

#### **Claims Rejections – 35 USC § 102**

Claims 1-7, 9, 11-14, 16-18, 20, 21 and 24-29 are rejected under 35 USC 102(e) as being anticipated by U.S. Patent No. 6,417,961 to Sun et al. Applicant respectfully traverses this rejection and requests reconsideration.

Independent claim 1 has been amended to recite "allowing chromatic dispersion to accumulate over a plurality of spans." "identifying a plurality of non-periodically spaced low

loss spans” and “compensating for dispersion accumulated on said plurality of spans using a plurality of dispersion compensating fibers...directly coupled to an associated one of said low loss spans.” Similarly, independent claim 27 has been amended to recite “high loss spans and low loss spans” and at least one Raman/EDFA amplifier including “at least one dispersion compensating fiber coupled to one of said low loss spans.” Independent claim 20 has been amended to incorporate the subject matter of dependent claim 21, namely, “allowing chromatic dispersion to accumulate over a plurality of spans of said optical path to a first predetermined level before amplifying said signal with said Raman/EDFA amplifier.”

As described in the present application on page 5, lines 3-19, compensating for dispersion following a low loss span enables the amount of power launched into the dispersion compensation fiber to be minimized, thereby optimizing performance of the optical amplifier. Moreover, allowing dispersion to accumulate over several spans reduces the cost and complexity of the system.

The Sun patent fails to disclose the limitations recited in amended independent claims 1, 20 and 27. Similar to the conventional approach described in the present application on page 2, lines 11-17, the Sun patent describes a system in which each span is individually compensated. Although the Sun patent discloses a system including spans 16 and amplifiers 18 (see Fig. 1), all of the optical amplifiers 18 provide dispersion compensation instead of allowing dispersion to accumulate over several spans. The Sun patent addresses the issue of varying dispersion by providing an amplifier 18 that allows dispersion compensation to be adjusted (see Abstract). The Sun patent never refers to the associated loss of the spans 16.

Therefore, the Sun patent does not disclose a method of compensating for chromatic dispersion including identifying at least one low loss span and compensating for dispersion using dispersion compensating fiber coupled to the low loss span, as recited in amended independent claim 1. The Sun patent also does not disclose a method of communicating an optical signal including allowing chromatic dispersion to accumulate over a plurality of spans of an optical path before amplifying the signal with a Raman/EDFA amplifier and compensating for dispersion using a dispersion fiber disposed between the Raman portion and the EDFA portion, as recited in amended independent claim 20. The Sun patent also does not disclose an optical communication system in which at least one dispersion compensating fiber in a Raman/EDFA amplifier is coupled to a low loss span, as recited in amended independent claim 27.

For these reasons, Applicant respectfully submits that the Sun patent does not anticipate independent claims 1, 20 and 27 or the claims dependent therefrom.

Independent claims 13 and 17 have been amended to incorporate the subject matter of dependent claims 14 and 18, respectively, and thus recite a Raman/EDFA amplifier in which "said EDFA portion is a single stage EDFA." As described in the present application on page 6, lines 13-21, and page 7, lines 18-25, the use of a single-stage EDFA in a Raman/EDFA amplifier allows for improved noise performance compared to conventional two-stage EDFAs.

In contrast, the optical amplifier described by the Sun patent includes a two-stage EDFA. In particular, the Sun patent describes an amplifier 18 having a first preamplifier stage 24 and a second power amplifier stage 34 (see Sun, FIGS. 2, 5, 7, 8, 9 and 10; col. 3, lines 41-42 and col. 4, lines 1-4.) The Sun patent describes both stages 24, 34 as being EDFAs (see Sun, col. 6, lines

25-31). Thus, the Sun patent does not disclose a Raman/EDFA including a single-stage EDFA portion, as recited in amended independent claims 13 and 17.

For this reason, Applicant respectfully submits that the Sun patent does not anticipate independent claims 13 and 17 or the claims dependent therefrom. Because none of the amended independent claims are anticipated by the Sun patent, Applicant respectfully requests that the rejection under 35 USC 102 be withdrawn.

Claims 8, 10, 15, 19, 22 and 23 are rejected under 35 USC 103 as being unpatentable over the Sun patent in view of U.S. Patent No. 6,466,362 to Friedrich. Applicant also respectfully traverses this rejection.

The Friedrich patent fails to disclose or suggest the elements and limitations described above, which are missing from the Sun patent. Thus, even if the Sun patent could be combined with the Friedrich patent, the combination would not teach all of the claimed elements and limitations. Accordingly, Applicant requests that the rejection of claims 8, 10, 15, 19, 22 and 23 under 35 USC 103 be withdrawn.

The claims have been shown to be allowable over the prior art. Applicant believes that this paper is responsive to each and every ground of rejection cited by the Examiner in the Office Action dated September 30, 2004, and respectfully requests favorable action in this application. The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

Please apply any charges not covered, or any credits, to Deposit Account No. 50-2121 (Ref. No. 1020).

RESPECTFULLY SUBMITTED,

A handwritten signature in black ink, appearing to read 'K. Carroll', is written over a horizontal line.

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